IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application No:	10/708,679
Filing Date:	March 18, 2004
Applicant(s)	Jianbo Lu
Group Art Unit:	3683
Confirmation No:	2678
Examiner:	Douglas C. Butler
Title:	METHOD AND APPARATUS FOR CONTROLLING AN AUTOMOTIVE VEHICLE IN A U-TURN
Attorney Docket No:	81095829 (36190-27)
Customer No:	28549

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

August 17, 2007

RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF AND CORRECTED APPEAL BRIEF

Sir:

The following Corrected Appeal Brief is submitted pursuant to the Notification of Non-Compliant Appeal Brief mailed July 18, 2007, for the above-identified application.

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I hereby certify that this correspondence is being deposited via electronic submission on the USPTO website.

Commissioner for Patents
PO BOX 1450
Alexandria, Virginia 22313-1450

on 08-17-07

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I. Real Party in Interest

The real party in interest in this matter is Ford Global Technologies, LLC, which is a wholly owned subsidiary of Ford Motor Company both in Dearborn, Michigan (hereinafter "Ford").

II. Related Appeals and Interferences

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of the Claims

Claims 1-46 are pending in the application. Each of Claims 1-46 stands rejected. The rejection of each claim is hereby being appealed.

IV. Status of Amendments

There have been no Amendments filed after the final rejection.

V. Summary of Claimed Subject Matter

Claims 1 and 20 are the only independent claims in the case.

Claim 1 is a method claim which is best understood with reference to Figures 1-3 and, particularly, Figure 21, as well as Paragraphs 136 and 137 of Appellant's Specification. Referring now to Figure 21, at Step 300, a U-turn is detected from various sensors and inputs. A push button on the instrument panel is cited as one of the various means for triggering the vehicle into a U-turn assist mode. U-turns may also be sensed. U-turn signals may be generated by, for example, a steering wheel angle sensor, wheel speed sensors, a yaw rate sensor, a vehicle velocity sensor, or a throttle position sensor.

At Step 302 of Figure 21, brake steer is activated in response to detecting a U-turn signal. Brake steer may be maintained until a threshold is exceeded, for example, at about 18 miles per hour. In other words, brake steer will not occur past 18 miles per hour. The U-turn signal may also be generated within the controller. The controller is shown in Figure 3 at 26.

Independent Claim 20

Independent Claim 20 is an apparatus claim for controlling an automotive vehicle which is best understood with reference to Paragraphs 136 and 137 of Appellant's Specification, and also with reference to Appellant's Figures 1-3 and 21. Claim 20 recites a means for determining a steering wheel characteristic, which may be, for example, steering angle from position sensor 38. A means for generating a U-turn signal when the vehicle is in a U-turn in response to the steering wheel characteristic is included in controller 26. And, controller 26 is coupled to steering angle position sensor 38. Controller 26 is programmed to apply brake steer to the vehicle in response to a U-turn signal, as set forth in Figure 21 which, at Block 300, shows a detection of U-turn followed by activation of brake steer according to one of the means shown at Block 304, which includes activating vehicle brakes, or Block 306, which iincludes applying positive/differential torque, or Block 308, which includes activating trailer brakes, or Block 310, which includes modifying the vehicle's suspension.

What is clear is that Appellants' use of the term U-turn means a low speed turn, certainly a turn less at speeds of less than 10-18 miles per hour.

VI. Grounds of Rejection to be Reviewed on Appeal

The following issues are presented in this appeal:

1. Are Claims 1-6, 20, and 21 properly rejected under 35 U.S.C. §103(a) as being unpatentable over US Publication to Wessman 2002/0066616 in view of Ritz et al and Ishido et al?

2. Are Claims 7-19, and 22-46 properly rejected under 35 U.S.C. §103(a) as being unpatentable over Wessman in view of Ritz and further in view of Yamawaki or Nishizaki or Shinmura, or under the US Publication to Zheng or Harara or the US Publication to Recker?

VII. Argument

Claims 1-6, 20, and 21 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over US Publication to Wessman 2002/0066616 in view of Ritz et al and Ishido et al

The Examiner states that Wessman discloses a steering control device including a steering transmitting device and a sensor 5, "arranged to detect at least one parameter relating to a condition of the steering actuator and generate a signal indicative of the condition." The

Examiner continues with the statement that Wessman also discloses a method to reduce turning radius of the vehicle by braking. The Examiner admits that Wessman lacks any specific terminology relating to brake-steering. For this, the Examiner turns to Ritz which, it is asserted, provides "a better explanation of ... [what] ... [is in fact occurring in Wessman]." The Examiner also notes that Wessman's steering position signal is indicating that a steering actuator is approaching a maximum limit position.

The Examiner admits, in essence, that neither Ritz nor Wessman teach anything regarding U-turn control. For this, the Examiner turns to Ishido which, he asserts, "uses 'J-turn' as an example" which is, in the Examiner's words:

> "relied upon to show applicant's limitation of 'U-turn' is nothing more than equivalent terminology of when the vehicle is turning from one directional state of travel to an opposite one – and possibly at its maximum turn capability. That is, it refers simply to a state of turning of the vehicle."

The Examiner concludes that it would have been obvious to have applied the teachings of Ritz to that of Wessman for safety considerations when the vehicle corners or when the vehicle is in the state of vehicle stability control, i.e., for increased safety.

Appellants have reviewed Wessman, Ritz and Ishido, and none of these references, whether taken singly, or in combination with each other, either teach or suggest Appellants' claimed invention because neither Wessman nor Ritz nor Ishido contain any teaching or suggestion that it should be determined whether a vehicle is in a U-turn. As noted above, the Examiner admits that Wessman and Ritz are bereft of any reference to a U-turn. Instead, as noted above, the Examiner turns to Ishido for this element. Ishido deals with a "J-turn" which, in Ishido, at Col. 1, at lines 41-44, is defined as:

> "However, in the case of a J-turn (which is a well known state when a vehicle enters a curve at a speed exceeding a predetermined value and the driver makes a sharp turn), there occurs the following phenomenon."

In essence, Ishido is referring to a high-g turn and this conclusion is buttressed with reference to Ishido's abstract wherein he states:

> "When a J-turn state of the vehicle is detected by lateral acceleration, the reference vehicle speed is changed to a lower value and a second reference wheel speed is determined on the basis of that lower value."

Accordingly, it is abundantly clear that Ishido is dealing with high-g turns, and uses the term "J-turn" as shorthand for a turn accompanied by high-g lateral acceleration. There can be no other reasonable conclusion. This is why Ishido teaches the use of lateral acceleration detection as part of his teaching. In contrast, as set forth in their specification, Appellants' invention deals with U-turns made at speeds less than a predetermined threshold, as while parking, without exhibiting any sort of high-g phenomena. As noted above, "U-turns" are defined in Appellants' specification as being at less than 10-18 miles per hour.

Appellants respectfully reiterate that none of the references cited by the Examiner is apposite to the case at bar because none deals with determining that vehicle is in a U-turn in response to a steering wheel characteristic, followed by brake-steer in response to the U-turn signal. As a result, the combination proffered by the Examiner cannot comprise a colorable basis for rejection of Appellants' Claims 1-6, 20 and 21 and the Examiner should be reversed.

Claims 7-19, and 22-46 are not properly rejected under 35 U.S.C. §103(a) as being unpatentable over Wessman in view of Ritz and further in view of Yamawaki or Nishizaki or Shinmura, or under the US Publication to Zheng or Harara or the US Publication to Recker

Each of Claims 7-19 and 22-46 depends from one of the independent claims previously discussed, in other words, Claims 1 or 20. Neither Yamawaki, Nishizaki, Shinmura, Zheng or Harara teach or suggest anything regarding determining whether a vehicle is in a U-turn and having made such a determination applying brake-steer. As a result, each of Claims 7-19 and 22-46 is allowable over the Examiner's rejection and the Examiner should be reversed.

In his previous response to arguments, the Examiner maintains that he "simply stated the Wessman reference lacked applicants' specific language of a U-turn." Appellants respectfully submit, however, that the Examiner is not abiding by a most basic principle of claim interpretation -- namely that a patentee is entitled to be his own lexicographer. In this case, the lexicography of the present application specifically defines a U-turn as occurring at a low speed, and not the high speed "J" turn discussed by Ishido. As a result, the combination proffered by

the Examiner cannot comprise a colorable basis for the rejection of Appellants' Claims 1 and 20, nor any claims depending therefrom, and the Examiner's rejection should be reversed.

VIII. Claims Appendix

A copy of each of the claims involved in this appeal is attached as a Claims Appendix.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

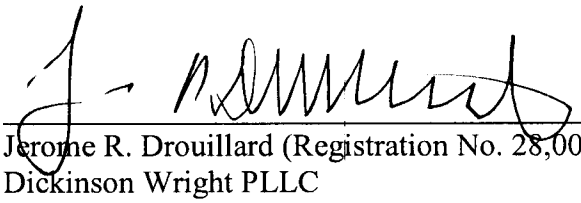
None.

XI. Conclusion

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to deposit account 06-1510.

Respectfully submitted,



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CLAIMS APPENDIX

1. A method for controlling an automotive vehicle comprising:

determining a steering wheel characteristic;

determining the vehicle is in a U-turn in response to the steering wheel characteristic;

generating a U-turn signal in response to determining the vehicle is in a U-turn; and

applying brake-steer in response to the U-turn signal.

2. A method as recited in claim 1 wherein applying brake-steer comprises applying at least one brake at a first wheel to reduce a vehicle turning radius.

3. A method as recited in claim 1 wherein applying brake-steer comprises applying an increased drive torque to a second wheel relative to a first wheel.

4. A method as recited in claim 1 applying brake-steer comprises increasing the normal load on a rear wheel.

5. A method as recited in claim 1 applying brake-steer comprises increasing the normal load on a front wheel.

6. A method as recited in claim 37 wherein the steering wheel characteristic comprises a steering wheel direction.

7. A method as recited in claim 6 wherein the steering wheel direction comprises an increasing direction and a decreasing direction wherein varying the amount of brake-steer comprises applying brake-steer using a first boost curve in the first direction, and applying brake-steer using a second boost curve in the second direction, wherein the first boost curve is different than the second boost curve.

8. A method as recited in claim 7 wherein the first boost curve comprises a non-linear-boost curve.

9. A method as recited in claim 7 wherein the first boost curve increases brake-steer at a first rate for a first period of time, increases brake-steer at a second rate for a second period of time wherein the second rate is greater than the first rate, and increases brake-steer at third rate for a third period of time wherein the third rate is less than the second rate.

10. A method as recited in claim 7 wherein the second boost curve comprises a non-linear-boost curve.

11. A method as recited in claim 7 wherein the second boost curve decreases brake-steer at a first rate for a first period of time, and decreases brake-steer at a second rate for a second period of time, wherein the second rate is less than the first rate.

12. A method as recited in claim 1 wherein the steering wheel characteristic comprises a steering wheel angle.

13. A method as recited in claim 12 wherein determining the vehicle is in a U-turn comprises determining the vehicle is in a U-turn in response to the steering wheel angle and a vehicle speed.

14. A method as recited in claim 1 wherein brake-steer is applied until the vehicle speed exceeds a U-turn speed threshold.

15. A method as recited in claim 1 wherein determining the vehicle is in a U-turn comprises determining the vehicle is in a U-turn in response to a yaw rate and the steering wheel characteristic.

16. A method as recited in claim 1 wherein determining the vehicle is in a U-turn comprises determining the vehicle is in a U-turn in response to a yaw rate, the steering wheel characteristic and a vehicle speed.

17. A method as recited in claim 1 wherein determining the vehicle is in a U-turn comprises determining the vehicle is in a U-turn in response to a throttle position and the steering wheel characteristic.

18. A method as recited in claim 1 wherein determining the vehicle is in a U-turn comprises determining the vehicle is in a U-turn in response to a steering wheel rate and steering wheel angle.

19. A method as recited in claim 1 wherein determining the vehicle is in a U-turn comprises determining the vehicle traveled straight followed by a sharp turn with an increasing vehicle speed and high steering wheel angle.

20. A system for controlling an automotive vehicle comprising:

means to determine a steering wheel characteristic;

means to generate a U-turn signal when the vehicle is in a U-turn in response to the steering wheel characteristic; and

a controller coupled to said means to generate, said controller programmed to apply brake-steer to the vehicle in response to the U-turn signal.

21. A system as recited in claim 20 wherein means to generate a U-turn signal comprises a vehicle velocity sensor and the means to determine a steering wheel characteristic comprises a steering wheel angle sensor.

22. A system as recited in claim 20 wherein means to generate a U-turn signal comprises a plurality of wheel speed sensors generating a plurality of wheel speeds.

23. A system as recited in claim 20 wherein means to generate a U-turn signal comprises a yaw rate sensor.

24. A system as recited in claim 23 wherein means to generate a U-turn signal further comprises a vehicle velocity sensor.

25. A system as recited in claim 20 wherein means to generate a U-turn signal comprises a throttle position sensor and a yaw rate sensor.

26. A system as recited in claim 20 wherein means to generate a U-turn signal comprises means to determining the vehicle has traveled straight followed by a sharp turn with an increasing vehicle speed and high steering wheel angle.

27. A system as recited in claim 20 wherein said controller is programmed to brake-steer by applying a first brake and a second brake reduce the turning radius of the vehicle.

28. A system as recited in claim 20 wherein said controller is programmed to brake-steer by applying at least one brake at a first wheel to reduce a vehicle turning radius.

29. A system as recited in claim 20 wherein said controller is programmed to brake-steer by applying an increased drive torque to a second wheel relative to the first wheel.

30. A control system as recited in claim 20 wherein the means to determine a steering wheel characteristic comprises a steering wheel angle sensor generating a steering wheel angle signal, said controller programmed to apply brake-steer in response to the U-turn signal and the steering wheel angle signal.

31. A control system as recited in claim 20 further comprising a yaw rate sensor generating a yaw rate signal, said controller programmed to apply brake-steer in response to the U-turn signal and yaw rate signal.

32. A control system as recited in claim 20 wherein the means to determine a steering wheel characteristic comprises a steering wheel torque sensor generating a steering torque signal, said controller programmed to apply brake-steer in response to the U-turn signal and steering torque signal.

33. A control system as recited in claim 20 wherein the means to determine a steering wheel characteristic comprises a steering wheel angle sensor generating a steering wheel angle signal and a vehicle velocity sensor generating a vehicle velocity signal, said controller programmed to apply brake-steer in response to the U-turn signal and steering wheel angle and vehicle velocity signal.

34. A method as recited in claim 1 wherein the steering wheel characteristic comprises steering wheel direction.

35. A method as recited in claim 1 wherein the steering wheel characteristic comprises steering wheel torque.

36. A method as recited in claim 1 wherein the steering wheel characteristic comprises steering wheel angular rate.

37. A method as recited in claim 1 wherein applying brake-steer in response to the U-turn signal comprises varying the amount of brake steer in response to the steering wheel characteristic.

38. A method as recited in claim 37 wherein the steering wheel characteristic comprises steering wheel angle.

39. A method as recited in claim 37 wherein the steering wheel characteristic comprises steering wheel torque.

40. A method as recited in claim 37 wherein the steering wheel characteristic comprises steering wheel angular rate.

41. A system as recited in claim 20 wherein the means to determine a steering wheel characteristic comprises a steering wheel angle sensor and the characteristic comprises a steering wheel direction.

42. A system as recited in claim 20 wherein the means to determine a steering wheel characteristic comprises a steering wheel angle sensor and the characteristic comprises a steering wheel rate.

43. A system as recited in claim 20 wherein the controller varies the amount of brake steer in response to the steering wheel characteristic.

44. A system as recited in claim 43 wherein the steering wheel characteristic comprises steering wheel angle.

45. A method as recited in claim 43 wherein the steering wheel characteristic comprises steering wheel torque.

46. A method as recited in claim 43 wherein the steering wheel characteristic comprises steering wheel angular rate.

Evidence Appendix

None.

Related Proceedings Appendix

None.